inteliance

ServersMaster

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User Manual

ServersMaster User Manual

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Welcome to ServersMaster

Introduction

ServersMaster is an easy-to-use and cost-effective Network Monitoring System (NMS). It monitors network devices for failures and irregularities and automatically executes remedial actions in order to fix problems before or right after they arise. Administrators can be notified on various network conditions and they can use the integrated networking toolset to easily understand and troubleshoot any issues.

The mission of the product is to safeguard your network infrastructure and your clients' satisfaction through the automated system of recovery actions. As soon as a problem or anomaly is detected, ServersMaster tries to fix it using a number of so-called Reactions that fire up when certain conditions are met. This enables smooth operations of the websites and other applications in the monitored network. Administrators can be immediately notified on the whole process of recovery, from the problem detection till its final state. The event log provides interface similar to a mail client, allowing you to filter events and write notes to a particular event. This enables you to have a better understanding of the overall scenario and keep track what went wrong and in which part of the network.

In a case when the problem requires human intervention, network administrators are just a click away from the resolution as they can quickly use any of the following built-in networking tools: Ping, Traceroute, Remote Ping, Remote Traceroute, Run SSH Commands, Open Service URL, Check Open Ports, DNS Lookup, Reverse DNS, Domain Whois and IP Whois.

ServersMaster monitors the network for problems such as overloaded and/or crashed devices, low performance of running services, huge traffic generation, to name a few. For example, to determine the status of a webserver, ServersMaster may periodically send an HTTP request to fetch a page. For email servers, a test message might be sent through SMTP and retrieved by IMAP or POP3. If there is no reply or if the response is considered abnormal, ServersMaster can promptly take recovery actions. Depending on the type of the Check a number of metrics can be measured such as response time; availability; uptime; percentage or value of used resources; transfer speed and other metrics manually defined by creating custom Checks. These metrics are used to define triggers for Check States, which in turn can trigger execution of a number of alerts and/or remedial actions.

The Importance of Network Monitoring

Network service providers and online businesses can lose thousands of revenue dollars by the minute as the network resources stay down. Their customers can demand compensation for their loss and they may run away to the competition if problems are not resolved promptly enough.

The importance of keeping the network resources up and running has increased dramatically with the reliance on technology in this modern era. The demand for capacity is growing at an exponential rate. The number of servers being administrated and monitored is growing, and they are not necessarily located in one data center. All these issues increase the value of network monitoring systems. However, no worries in this regard, ServersMaster has exclusively low pricing model, keep reading the following sections to find out more.

Why use ServersMaster?

ServersMaster in simple words means a highly affordable investment on a high performance network monitoring software. We encourage you to try ServersMaster and protect your Business from unexpected network problems while saving the investments for other important areas of your business.

To really know your network, you need a network monitoring solution that gives you real time information about your network. ServersMaster has the monitoring and database engine, as well as the user interface merged into a single desktop application. This provides super quick installation and ease of use. More importantly, the Monitor screen updates the Check states on the screen immediately when a new Check state is available.

As a desktop application, the user interface is quick and highly responsive, unlike network monitoring solutions based on web technologies. Special C/C++ coding techniques and micro optimizations enable ServersMaster to run thousands of Checks with low CPU and memory usage. The monitoring window is able to display hundreds of Check states in only one visible page. In addition to the real time status overview, administrators can easily track the lifetime of the device by generating reports in graphical and tabular form.

Key Features

All-in-One application

- **Single Desktop Application**
  The monitoring and database engine, as well as the user interface are merged into a single desktop application. This provides super quick installation and ease of use.
- **Instant Result Display**
  Having the engines and user interface merged into one application allows the status of Checks to be updated on the screen as soon as Check results are available. This means that you do not need to wait for a given interval (ex. each 60 sec) for the display to be refreshed.
- **Agent-less monitoring**
  No monitoring service (agent) is required on the monitored hosts.

Wide range of monitoring technologies

- **ICMP Checks**
  Ping, SSH Remote Ping, Traceroute.
- **TCP Port Checks**
  TCP Port Connectivity, TCP Port Advanced, TCP Port Range.
- **SSL Checks**
  SSL Certificate Expiry.

- **HTTP(S) Checks**
  HTTP Advanced, HTTP Transaction.
  Note: Different types of response values can be inspected.
- **Disk, Memory and CPU Checks**
  SSH HDD Usage, SSH Inodes Usage, SSH Memory Usage, SSH CPU Load.
- **Mail Checks**
  IMAP, POP3, SMTP, Route SNMP-IMAP, Route SNMP-POP3.
- **SNMP Checks**
  SNMP Traffic, SNMP System Uptime, SNMP Custom.
  Note: The integrated SNMP explorer helps creating custom SNMP checks.
- **SQL Checks**
  SSH MySQL, SSH PostgreSQL, SSH MySQL Stats
- **File Checks**
  SSH File Count, SFTP File Size, SFTP File/Dir Count, FTP Download Speed, FTP Response, FTP File Size.
- **Miscellaneous Checks**
  DNS Black List , SSH Custom.

Are you looking for a Check technology not already supported? Please let us know about your requirement and we will do our best to implement it as soon as possible.

Automatic alerts and remedial actions

Provides a number of so-called Reactions that fire up when certain conditions are met. They can be used to alert administrators on certain status or automatically execute actions in order to recover from failure without human intervention. A number of actions are provided including:

- Send email
- Send SMS
- SSH multi command execution
- HTTP(S) action
- Execute program
- Play sound
- Show popup message

Compact Monitoring Window

Devices are organized in groups in a tree view fashion. Checks and their status are displayed in only one row per monitored device. This compact view makes it easy to track down problem location even when hundreds of Checks are displayed in only one visible screen page

Network Recovery Toolset

Some network issues require human intervention to be resolved. Admins can use any of the following tools via simple right click menu in the device list window: Ping, Traceroute, Remote Ping, Remote

Traceroute, Run SSH Commands, Open Service URL, Check Open Ports, DNS Lookup, Reverse DNS, Domain Whois and IP Whois.

Advanced Events Log

When a Check state is negative, an event is saved in the event log. Events may be continuously updated with the latest result until the state is changed. Admins can mark the importance of events and can write notes to individual events in order to better track down and resolve issues.

Flexible Monitoring Data Storage

The network monitoring process can potentially store a large amount of information into the database. ServersMaster can save full monitoring data, meaning the result values of each Check. In case you need to decrease the database size an alternative is provided which uses special algorithm to aggregate monitoring data. In most cases, the results are very similar between the aggregated and full monitoring data.

Reports and real-time data view

- Follow real time Check result data in chart and tabular form.
- Generate graphical reports for one or multiple devices. Historical data of multiple devices can be easily compared through combined charts.
- A report can be exported to a single HTML file with charts embedded into the html code. This way reports can be easily shared among people, printed or saved to other formats.

High performance

ServersMaster can run thousands of Checks with low CPU and memory usage. Even on a netbook, you can run more than 1000 checks without any problem. This is enabled by the micro-optimized C/C++ code, asynchronous connections and threads re-usage.

Database security

The settings of some components (like SSH based Checks or Email alerts) require sensitive information such as login credentials to be saved in the database. All these settings are stored with AES 256 bit encryption using the admin password as the encryption key.

Available Licenses

You can start with a 30-day Trial Edition License that enables you to configure and test a fully functional version for up to 30 days. When the trial period is over you can continue on to use a limited version that has the monitoring engine disabled.

The commercial license comes in a number of editions. For more information about product editions and ordering a license product key, please visit our website at http://inteliance.com/go/store/serversmaster.

Installing the License Product Key

When the Trial Period is over you will be reminded to activate the product by a popup Activation Dialog. To activate the product before the end of the trial period, at the application menu bar select Help/About, and then in the About Dialog click the "Activate now" link.

The activation dialog requires you to enter (or copy/past) the product key. The activation process uses the internet connection to validate the product key. When the key is validated, you will be informed for the successful activation and you will be requested to restart the application for the license to take effect.

Software Installation

System Requirements

These are the 32-bit and 64-bit supported operating systems:

- Windows Server 2012
- Windows Server 2008 (R1 and R2) – Standard, Enterprise
- Windows 7 - Standard, Professional, Enterprise
- Windows Vista – Enterprise, Business, Ultimate
- Windows XP SP2 or later
- Kubuntu version 12.10 or later *

Notes:

1. You can try Windows or Linux systems not currently supported, but in that case we may not be able to fully assist you if you encounter an OS specific issue. The supported file systems on a Linux platform are ext3 and ext4, the latter one is recommended.
2. Administrator (root) privileges are required on Windows and Linux systems, because ServersMaster uses raw sockets to enable advanced options for Ping and Traceroute technologies.

Hardware Requirements

Minimum requirement:

- CPU: 2GHZ
- RAM: 1 GB
- Hard Disk space: 100 Mb

Recommended requirement for up to 1000 checks:

- CPU: Dual Core 2 GHZ
- RAM: 2 GB
- Hard Disk space: 1 GB

Recommended requirement for up to 10000 checks:

- CPU: Quad Core 3 GHZ
- RAM: 8 GB
- Hard Disk space: 4 GB

Installation Instructions

Installing on the Windows platform

1. Download the ServersMaster installer from the Inteliance website. Select the file according to your operating system and bit count.
2. Run the installer and follow the steps of the installation Wizard to complete the install.
3. Once the installer finishes, ServersMaster is available at the Windows Start Menu.
4. ServersMaster application has only one executable file, which integrates the database and monitoring engine, as well as the user management interface. This makes the installation of the whole network monitoring system super quick and easy.
5. ServersMaster requires administrator privileges in order to use ICMP protocol based components, such as Ping and Traceroute Checks. Please refer to the manual of your Windows version for how to run an application as administrator.

Installing on the Linux platform

1. Download ServersMaster package file from the Inteliance website. Select the file according to your operating system and bit count.
2. Create a new directory under the user home directory and unpack the archive in there.
3. Select all files in the directory and change their access permission to 777.
4. To run the application use the "serversmaster" executable file. Create a desktop link if needed.
5. The ServersMaster executable file integrates all the components of the network monitor system, including the database and monitoring engine, as well as the user interface.
6. ServersMaster requires administrator (root) privileges in order to use ICMP protocol based components, such as Ping and Traceroute Checks. Please refer to the manual of your Linux distribution for how to run an application as root.

Quick Start Guide

This is a 1-minute guide provided for experienced users to start using ServersMaster as fast as possible.

1. Download ServersMaster from Inteliance website and install it.
2. When you start up ServersMaster, you will need to enter the admin password. The password is used for database encryption (AES 256bit). Please note that there is no recovery option if you lost the password.
3. The main application window has 4 main sections separated as tab pages: Monitor & Tools, Timeline, Events, and Reports.
4. The "Monitor & Tools" section is used for device management and monitoring. To add new device or group, right click at the tree view to open the menu and select New Device or New Group.
5. To open the device settings window, right click on a device item and select Settings. Here you can add and configure the Checks, Alerts, Remedies, Service URLs and SSH Actions that are activated per device. When the settings are saved, the Checks are instantly executed and Checks state is updated on the screen.
6. To start the monitoring, open device settings, select the Checks tab page, and add a Global Check to the list of activated Checks. The Check settings by default are inherited from the Global Check, but you can customize it by simply turning off the inheritance. A number of built-in Global Checks are shipped with the installation, however there are many Check Technologies that you can use to create your own Global Checks that suit your needs.
7. Below the tree view you can find the network tools window. There are two ways to use the network tools: a) Enter the values and options in the respected tool page, or b) Right click on a device in the tree list and select a tool from the Tools menu.
8. The Timeline tab page provides overview of the current state of Checks per device. It also shows the monitoring history in a graph and tabular view.
9. The Events tab page provides a management interface that works in a similar way to a mail client. When a Check state is negative (Unknown, Warning or Down) an event is saved in the event log. Events are continuously updated with the latest result till the Check state is changed. Admins can mark the importance of events and can write notes to individual events in order to better track down and resolve issues.
10. The Reports tab page provides tabular and graphical view of the monitoring data for a given period of time. A special feature is to merge reports from several devices into a single one, for much clearer comparison and overview of a group of devices.

Basic Concepts

The Checks are the core actions that perform monitoring of devices. Checks execute functions to test a target device or service. They return formatted result message and response values in several result channels. The response values are inspected by state triggers used to change the current state of the Check. When the Check state is changed, re-actions can fire up in order to notify administrators and/or run remedial actions. This is the general process of monitoring and recovery.

Before going further, let us clear up some basic concepts on:

- What are the different Check State types
- What are the Global Settings
- What is the difference between a Check Technology and a Global Check

Check State Types

The current state of monitored devices or services in short is called the Check State. These are the possible Check states:

Icon	State Name	Description
✓	Up	The target device returned response value that is in the range of the OK threshold.
!	Warning	The response value is outside the OK threshold. The Check State may soon turn into Down or return to Up if the cause is only a temporary problem.
✕	Down	The host or service is unavailable or returns invalid response. In addition, the state happens in a case when the threshold value has been triggered.
?	Unknown	No response value can be obtained. The response value is required to trigger either Up, Warning or Down state. For instance, the SSH CPU Load Check requires SSH connection to obtain the CPU load values but the SSH connection could not be established.
⏸	Paused	The Check is temporarily paused. It can be paused by users or automatically in a case of a network connection problem on the local machine. This state is not saved when the application quits.
⊘	Disabled	The Check is disabled for undefined time by the user. It can be enabled at any time. This state is saved between application restarts.

Note: Administrators are free to change the behavior of state triggers in the settings for each Check. For instance, an administrator may configure a Check based on SSH CPU Load method to return Down state instead of Unknown state if a connection to the SSH server could not be established.

Global Settings

You may notice the word “Global” used for various settings in ServersMaster, in example: Global Checks, Global SSH Actions, Global Service URLs, Global Proxy Servers etc. We designed the software around the philosophy of Global Settings to reduce the configuration time when new items are added for monitoring.

The main things to remember for the Global Settings are:

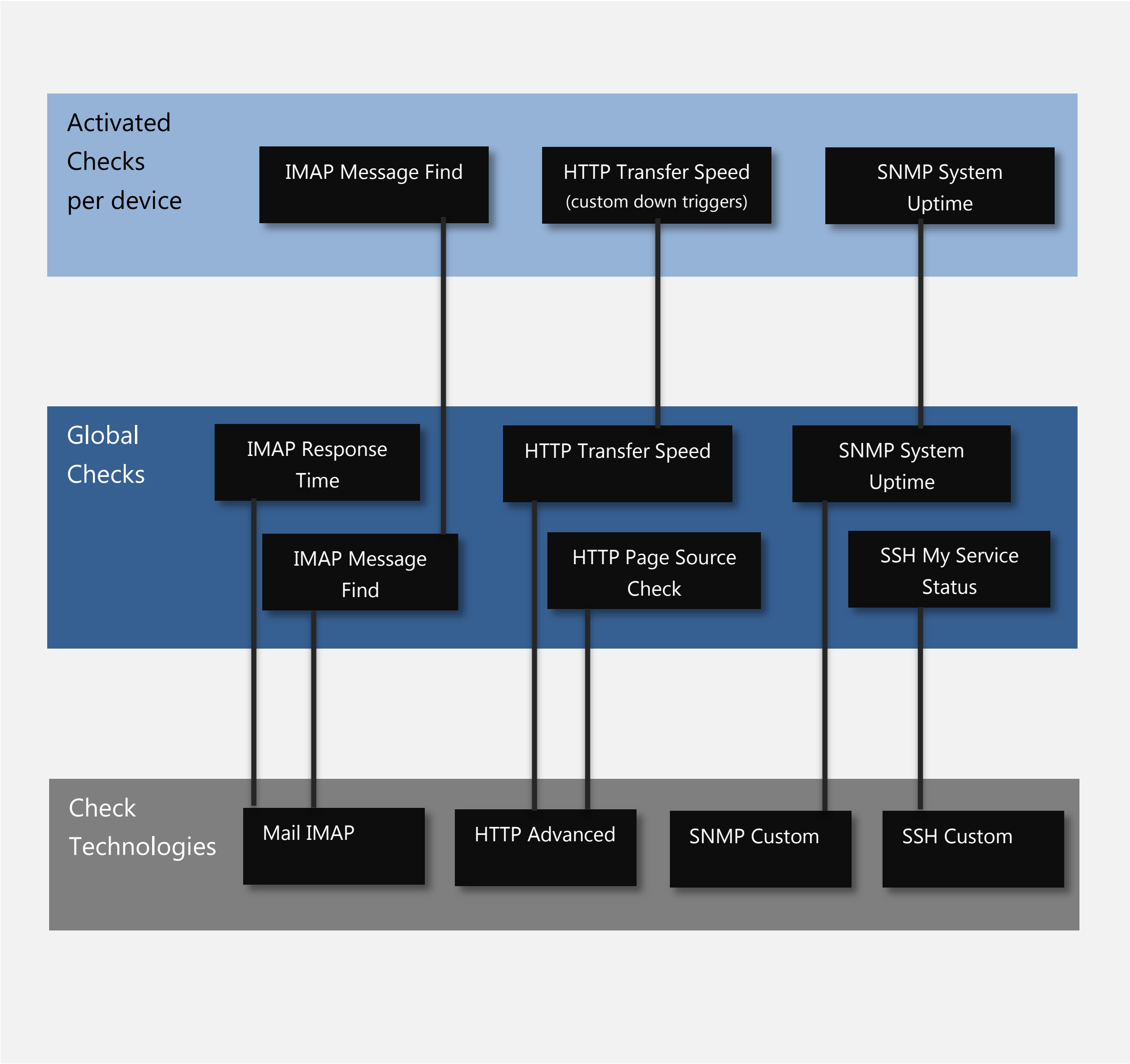
1. **Available to all devices**
   You can activate a particular Global Setting to any device. For example, you create one Global Check named "SMTP-IMAP route" and you can add it to any device for monitoring. You can create a Global SSH Action called "MySQL restart" and activate it as a remedial action to any device.
2. **Unified management**
   Changes made to the Global Settings take effect immediately to any component that is using it.
3. **Placeholders**
   Most Global Settings can accept the usage of placeholders. For example, you can configure a Global SMS Alert to send SMS to {ADMIN_PHONES}, which is a placeholder that will be translated on the fly. When the alert is executed, SMS messages will be sent to the admin phone numbers configured in the affected device settings.
4. **Configuration**
   All Global Settings are available in the "Options" menu under the menu bar. For simplicity of use, you can manage Global Settings in the settings dialog per individual component. For example, you can create new Global Check in the Device Settings dialog, under the Checks tab page. You can also manage the Global Proxy List right in the Check Settings dialog. Below is the list of all Global Settings:
   - Global Checks
   - Global Service URLs
   - Global SSH Actions
   - Global HTTP(s) Actions
   - Global SMS Actions
   - Global Email Alerts
   - Global Tray Messages
   - Global Run Programs
   - Global Proxy Servers

What's the difference between a Check Technology and a Global Check

A Check Technology performs a test to verify the condition of the given host, service or application. Each Check Technology provides many different options and ways to conduct the test. Admins will waste a lot of time if they need to configure all those options for every different device or service that is going to be monitored. The traditional way of solving this issue is by inheriting the Check settings from a parent device. While this can save time to a certain level, it becomes cumbersome in most cases. ServersMaster uses another approach. Each device can use Checks that inherit settings from a Global Check, instead of a parent device.

In simple words, to monitor a device or service, first you need to create Global Checks using any of the available Check Technologies (ex: Ping, HTTP, SMNP), and then apply those Global Checks to different devices. For example, to monitor a device using the IMAP technology, first you need to create a Global Check based on the IMAP technology. You can tailor the Global Check for the specific purpose. For instance, you can create a Global Check that searches for a specific message in a given mailbox.

The following diagram puts the above explanation into perspective:



User Interface Overview

The first thing you have probably noticed is the simplified User Interface (UI). Our design goal is to provide fast workflows through a clean UI. So let us see take a look at the basic UI and see if we can quickly learn how ServersMaster works.

The application window is designed around a "tabbed layout" system. The tabs at the top that allow you to quickly access the major sections of the program. The main application tabs are:

1. Monitor & Tools
2. Timeline
3. Events
4. Reports

The application menu bar contains options that are self-explanatory so it will not be covered in much detail. The four major application tabs will be explained in the following pages.

Monitor & Tools Tab

The Monitor & Tools tab is separated into two parts:

1. Device List Window
2. Network Tools Window

Device List Window

This window displays the tree list of devices and separate columns for their current states. All checks activated per device are displayed in one row and this provides at a glance view of hundreds of Checks states in only one visible screen page. We do not show any classical toolbar in order to save screen space even more. All the options are available in the right-click menu (or the Context Menu).

If you open the menu over a group item, it will allow you to run actions for all devices under the same group. Similarly, you can select a number of devices and run an option from the menu to the whole selection. In example, you can open the menu on a group and select the Ping tool to execute pings for all devices under the selected group.

The options in the right-click menu are as follows:

- **Timeline**
  Opens the Timeline for the selected device that shows an overview of the Check states, the last response message and values, as well as the monitoring history in a graph and tabular view.
- **Events**
  Opens the events log. The events displayed are filtered for the selected devices or groups at the time when the right-click menu was opened.

- **Tools**
  Provides a sub-menu of network tools available for the selected devices or groups, such as: Ping, Traceroute, Remote Ping, Remote Traceroute, DNS Lookup, Reverse DNS, etc. The network tools window is displayed in the same "Monitor & Tools" tab.
- **Reports**
  Opens a sub-menu with available checks for which reports can be generated. You can select more devices or groups and invoke the menu option to create a combined report.
- **Pause Checks**
  Opens a submenu of available Checks that can be paused. This option temporarily pause the Checks during the runtime of the application. Checks can be un-paused at any time using the option Restart Checks. A paused Check and a disabled Check has different meaning. Users can disable a Check for undefined time and this state is saved between application restarts, unlike a paused Check, which is automatically activated when the application starts.
- **Restart Checks**
  Opens a submenu of available Checks that can be restarted. This option will activate the paused Checks or will execute the Checks immediately without waiting for the check interval to complete.
- **Service URL**
  Opens a sub-menu of predefined Service URLs for the selected device. The Service URLs can be configured in the Device Settings dialog.
- **SSH Action**
  Opens a sub-menu of predefined SSH Actions enabled for the selected device. For the SSH Actions to work you need to configure the SSH login credentials for the device. The SSH Actions can be configured in the Device Settings dialog.
- **New**
  Opens a sub-menu that provides options for adding new devices or groups. The special option "Edit as new" allows you to create a duplicate of the selected device.
- **Settings**
  Opens the Device Settings dialog used to configure the General Device Details, Checks, Alerts, Remedies, Service URLs, SSH Actions and Notes.

Network Tools Window

This window provides a number of important networking tools available in different tabs. You can change the window position using the following option in the menu bar: "View / Tools Orientation". You can hide the tools window using the arrow key located in the upper left corner (only available if the window is positioned below the Device List Window).

Timeline Tab

The Timeline tab page provides overview of the current state of Checks per device. It also shows the monitoring history in a graph and tabular view. To quickly access the timeline of a specific Check simply double click on the Check item displayed in the Device List Window.

Events Tab

This tab provides a management interface for Events similar to a mail client. Events are triggered only if a Check state is negative (Unknown, Warning or Down) or if there is an error while executing reactions (alerts or remedies). To quickly filter events for particular devices simply select one or more devices or a group in the Device List Window and double click on any selection in the position of the Events Column.

Reports Tab

This tab provides a tabular and graphical view of the monitoring data for a given period of time. Multiple devices can be selected in order to create a combined report. To create reports for one or multiple devices, open the right-click menu over the selection of devices in the Device List Window and select an option from the Reports sub-menu.

Application Settings

The application wide settings are available in "Options/Application Settings" under the menu bar. Refer to the section "Application Settings" in this document for more information.

Events Management

The Events management interface is available under the Events tab. It provides functionality similar to a mail client, with the difference that some events can update their data continuously.

There are two main event types:

1. **Device Issues**
   These events are triggered when a Check State changes to Unknown, Warning or Down (also called Negative States). These events are continuously updated with the latest response message and state duration until the Check state is changed.
2. **Reaction Errors**
   These events are triggered if there is an error during execution of reactions (Alerts or Remedies). For instance, if the Check State is down for more than 30 min, an email action could be made to inform administrators on the problem. However if the email could not be sent a Reaction Error event is saved.

These are the main features of the Events interface:

- **Number of unread events**
  The Events Tab itself shows the number of unread events. When you click on event item, it is marked as read. The administrator can turn back to unread state if needed.
- **Filtering per device and checks**
  To display events for particular devices and checks you can use the selection boxes at the. The other way, and much more intuitive, is to do this from the "Monitor & Tools" tab - simply select devices in the Device List Window, open the right-click menu and click the Events item.
- **Additional filters**
  To get a better overview of the events, you can further filter the list by
  a) Read/Unread events.
  b) Starred/Not starred events.
  c) Noted/Not noted events.
- **Current (live) events**
  Current or live events are those generated for the current Check State. In example, if a Check turns to Down state, an Event in a red color appears in the log. Until the state is Down the event cannot be deleted, because it may receive status updates.
- **Duration of a state**
  Events related to device issues are constantly updated with the total duration of the current state shown in the corresponding column.
- **Result messages**
  The last result message is displayed in a separate text box on the right when you click on an event item. If the event is related to a device issue, the initial result message is shown as well.
- **Notes per event**
  To write or update a note for an event, select a particular event and use the text box located at the lower right corner. The [Save] button needs to be clicked for the changes to be saved.

Events and Alerts do not refer to the same thing. Alerts fire certain actions to send a notification to the administrators by external means, outside the scope of the application. On the contrary, the Events log is the internal notification system that displays the network problems detected during the monitoring and errors encountered during the execution of reactions.

You can safely delete any event and keep only the important ones that relate to the current problem or to an important problem from the past. When you delete an event, you do not delete any monitoring data used by the Device Timeline or Reports, because Events are saved in a separate table in the database.

By default, all negative states of devices such as Unknown, Warning or Down state are saved in the Events log. However, you can adjust the events trigger for a particular Check to consider only specific states. For instance, using the Check Settings dialog you can configure a Check to save Events to the log only on Warning or Down state, but not when the state turns to Unknown.

Reports

The Reports interface is available under the Reports tab. It provides a tabular and graphical view of the monitoring data for a specified period of time. Reports are generated for a specific Global Check activated for a particular device. If more devices use the same Global Check, their monitoring data can be incorporated into a single (or combined) report.

The key points of a Report generation workflow are:

Device and Check Selection

Use the device drop-down box to select a particular device. To select multiple devices, hold down the control key while using the left-mouse click. Then select a particular Check from the second drop-down box.

Define Monitoring Period

Select any of the predefined earlier dates. You can manually define monitoring period using the option "Specific period", then enter the start and end date.

Displaying Non-Monitored Periods

A non-monitored period may refer to a period when:

- The Check was disabled or paused.
- The Check state was Unknown. This means that there was no response value that could have been used to determine the Down, Warning or Up state.
- ServersMaster was not running or it was automatically paused. This can happen due to network connection issues on the local machine.

If you check the option "Show non-monitored periods", ServersMaster will paint the non-monitored area in a gray color for better overview. Otherwise, the chart lines will simply have gaps that represent the non-monitored period.

Downtime Calculation Type

This option defines whether only one Down state is enough to count as a Down time or there must be at least two consecutive Down states. Consider the following scenario:

1. Check State: Up - time: 16:00
2. Check State: Down - time: 16:10
3. Check State: Up - time: 16:20

If the selected option is "Between arbitrary and Down state" then the single (non-consecutive) Down state shown in the above example will be included in the total Down time in the report. This calculation is not completely accurate when there is only a single Down state, and the reason is simply because we need at least two Down states in a row to be able to measure the time span between them. In such case, ServersMaster calculates the down time from the time of the previous state (any state other than Down returned by the Check test) till the time of the Down state. In our example above that would be 10 minutes of Down time.

If the selected option is "Between at least two Down states" then the single (non-consecutive) Down state shown in the above example will be not be included in the total Down time in the report. This option helps creating reports that are more accurate since they always show the exact duration of the Down time. Administrators prefer to use this type of Down time calculation because in most cases a single Down state is considered a temporary problem.

Temporary network delays may be the cause of "false" Down states. To make sure you only get a "real" Down state, configure the Check to make more retries in a single run. In example, for a TCP Port Check you can set a value of 3 connection retries.

Report Components

When you click the "Show Report" button, a report is generated that consists of two parts:

Graphs

One or more interactive charts will be displayed depending on the type of Check. If you select only one device to generate report for, the areas in the graph will be filled with a color. If you combine more devices into one report, each device will be represented with a separate line in a different color.

The interactive charts provide the following options:

1. To see values of a specific line point, mouse hover over lines in the chart;
2. To zoom a chart area, hold the shift key while moving the mouse wheel;
3. To pan the chart area upon zooming, hold the mouse left-click and drag the area left or right.

Table of monitoring data

You can find the monitoring data organized in a table at the bottom of the report. Only one page with a maximum of 50 items is displayed at a time. You can navigate to other pages using the controls located in the table footer and header. If you have configured the data storage to a type of aggregation instead of a raw data storage type, then the column "Number of Checks" will display the number of Checks accounted by the aggregation algorithm for the corresponding record.

Save Report as HTML File

Use the "Save As" button positioned right below the "Show Report" button to exported the report to a single HTML file. The charts will be embedded into the html code. Having all data and images in one file makes it simple to share the report. To convert the report to another format, you will need to open the html file in a browser and export it to other formats from there. Same goes for printing the HTML based report, you will need to open in a browser first and use the browser's printing options.

The table of monitoring data that is a part of the HTML file will contain all the monitoring data for the specified period. If there is many data it will take more time to generate the HTML file, please be patient is such case.

Application Settings

To open the application settings interface select "Options/Application Settings" under the menu bar. The main tabs provided in the application settings are: 1) General and 2) Database. The options in these tabs will be explained in the following pages.

General Tab

This section provides the following options:

- **Connection**
  Allows you to configure the application wide proxy settings**.** The application wide proxy will be used for all connections. However, note that the Ping, Traceroute, SNMP and DNS Blacklist based Checks and Tools do not support proxy connection.
- **Localization**
  Allows you to modify the date and time format used across the application, including the format used in the reports.
- **Administrator password**
  Allows you to change the administrator password used to login to the interface and to encrypt the sensitive information in the database. The password change requires the database to be re-encrypted. If the database is too large this process may take a while, please be patient.
- **Updates**
  Allows you to configure whether ServersMaster should automatically check for version updates when it is stared up.

Database Tab

This section provides information about the size of the database file and options to shrink it and speed it up. The size of the database may grow faster if Checks are configured to store full monitoring data instead of aggregated data. You can alter this behavior in the Check options.

If you find the size too big you can reduce it by deleting old records related to the monitoring data storage.

If you experience slow downs when generating the monitoring history and reports you can use the option "Defragment database". The defragmentation process will reconstruct the database file resulting in a faster access time.

Device Settings

The device settings dialog provides options for all the aspects of a monitored device including the configuration of checks and reactions. To open the settings dialog, right-click on a device under the "Monitor & Tools" tab and select "Settings" from the pop-up menu.

The device settings dialog is organized in sections provided under the following tabs: General, Checks, SSH Actions, Service URLs and Notes. These sections will be described in the following pages.

General Tab

This section allows you to specify the following options:

- **Display Name**
  Enter the name that will be displayed in the Device List.
- **DNS Name or IP Address**
  Enter the DNS Name or IP Address of the device.
- **Credentials for SSH enabled systems**
  Enter the SSH username, password and port if the device supports SSH protocol. If you don't specify anything here you will not be able to run SSH based checks, alerts and remedies on the device.
- **Admin contacts**
  Enter values for admin emails and phone numbers. You can use these values as placeholders in Check or Reaction options. For example, when you configure an email alert action, you can use {ADMIN_EMAIL} in the "To" field. The {ADMIN_EMAIL} placeholder will be translated to the administrator's email configured in this section when the email is about to be sent.

Checks Tab

This tab provides an interface for the configuration of Checks used to monitor the device. The steps to add a Check to the device are:

1. Select a Global Check from the drop-down box located at the top of the tab window.
   Note: A number of built-in Global Checks are shipped with the installation, but they do not cover all the available Check Technologies. You can create your own Global Checks that suit your needs. To do that click the button "Create new Global Check" and follow the wizard.
2. Click the button "Add Global Check to device". The Global Check will be included in the list of activated Checks for the device.
3. To open the Check Settings dialog, select one Check from the list of activated Checks and click the "Customize" button. By default, options are inherited from the Global Check. However, you can customize the Check settings by simply turning off the inheritance.
4. You can notice a check box in front of the names of activated Checks. You can uncheck the box if you want to disable the Check. This feature is provided in case you do not want to delete the Check because you may reuse it some time in the future.

SSH Actions Tab

In this section, you can create a list of SSH Actions that will be available in the right-click menu opened at the Device List under the "Monitor & Tools" Tab. The concept of Global options is used meaning you will first need to create Global SSH Actions that can be included to any device, and then select a number of them to be activated for the device that is being configured.

Service URLs Tab

In this section, you can create a list of Service URLs that will be available in the right-click menu opened at the Device List under the "Monitor & Tools" Tab. The concept of Global options is used meaning you will first need to create Global Service URLs that can be included to any device, and then select a number of them to be activated for the device that is being configured.

Notes Tab

The Notes tab provides a text editor that you can use to write notes specific to the device being configured. The notes are saved in the database in an encrypted form, which provides a safe way to keep the notes that contain sensitive information.

Group Settings Template

The group settings template is a settings dialog that provides the exact same options like the Device Settings dialog. The settings configured here are used as a template when you add a new device under a particular group.

To open the settings dialog, right-click on a group under the "Monitor & Tools" tab and select "Group Settings Template" from the pop-up menu.

Check Technologies

A Check Technology performs a test to verify the condition of the given host, service or application. Each Check Technology provides many different options and ways to conduct the test. Admins will waste a lot of time if they need to configure all those options for every different device or service that is going to be monitored. The traditional way of solving this issue is by inheriting the Check settings from a parent device. While this can save time to a certain level, it becomes cumbersome in most cases. ServersMaster uses another approach. Each device can use Checks that inherit settings from a Global Check, instead of a parent device. This design has been accepted as much more intuitive, and it practice it allows admins to configure devices much faster.

For more explanation about the differences between Check Technologies and Global Checks, please refer to the section **Basic Concepts** in this manual.

In simple words, to monitor a device or service, first you need to create Global Checks using any of the available Check Technologies (ex: Ping, HTTP, SMNP), and then apply those Global Checks to different devices.

To create a Global Check, please follow these steps:

1. Open the menu **Options/Global Checks** located under the menu bar.
2. Click the **New** button at the Global Checks dialog.
3. Select a Check Technology and then click the **Next** button.
4. Enter the parameters in the Check Settings dialog and then click the **Save** button.

To apply a Global Check to a device, please follow these steps:

1. Select a device in the **Device Tree List**, located under the **Monitor & Tools** tab.
2. Open the right-click menu and select **Settings**.
3. In the Settings dialog switch to the **Checks** tab and click the **Add Global Check** button.

All the available Check Technologies will be explained in the following pages.

Ping

This Check Technology is used to monitor devices for availability using ICMP protocol.

Result channels

1. Average response time (ms)
2. Packet loss (%)
3. Standard deviation (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Execution	
Rounds per check	Specify the number of echo requests to send per one Check scan. You need to specify more than 2 rounds if you want to track the fluctuations in the standard deviation.
Time between rounds	Specify the time to wait before sending the next echo request.
Triggers	
Warning state if packet loss greater than	Specify the minimum packet loss, in milliseconds, that triggers a Warning state.
Down state if packet loss greater than	Specify the minimum packet loss, in milliseconds, that triggers a Down state.
Warning state if response time greater than	Specify the minimum response time, in milliseconds, that triggers a Warning state.
Down state if response time greater than	Specify the minimum response time, in milliseconds, that triggers a Down state. This value works as a ping reply timeout.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

Traceroute

This Check Technology is used to monitor the changes in the route from an IP network to the target host.

Result channels

1. Hop count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Execution	
Rounds per check	Specify the number of echo requests to send per hop.
Time between rounds	Specify the time to wait, in milliseconds, before sending the next echo request.
Triggers	
Reply timeout	Specify the time, in milliseconds, to wait for a reply before timing out.
Max hop count	Specify the maximum number of hops to search for the target host.
Warning state if hop count greater than	Specify the minimum hop count that triggers a Warning state.
Down state if hop count greater than	Specify the minimum hop count that triggers a Down state..
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

TCP Port Connect

This Check Technology is used to monitor the connectivity to a TCP port.

Result channels

1. Port connection time (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the … button right next to the selection box.
Connection	
TCP port	Specify the TCP port to be used when connecting to the target host.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
At connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning state if connection time greater then	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down state if connection time greater then	Specify the minimum connection time, in milliseconds, that triggers a Down state. This value works as a connection timeout.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts &	

Remedies)" in this document for more details.

TCP Port Advanced

This Check Technology is used to monitor the connectivity to a TCP port and to check the response value.

Result channels

1. Port connection time (ms)
2. First byte time (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connection	
TCP port	Specify the TCP port to be used when connecting to the target host.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
At connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning state if connection time greater then	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down state if connection time greater then	Specify the minimum connection time, in milliseconds, that triggers a Down state. This value works as a connection timeout.

Warning state if first byte time greater then	Specify the minimum first byte time, in milliseconds, that triggers a Warning state. The first byte time is the time from when the connection to the host established until the first byte starts coming in as a response from the service running on the host.
Down state if first byte time greater then	Specify the minimum first byte time, in milliseconds, that triggers a Down state. The first byte time is the time from when the connection to the host established until the first byte starts coming in as a response from the service running on the host.
Check response content	
Send command	Enter the command to send to the host as soon as the service running on the target port is ready to accept data.
If the last response value is different then the previous, set	Specify which state to be set if the initial response value is different from subsequent response values. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

TCP Port Range

This Check Technology is used to monitor the status on a range of ports (open/closed) on the target device.

Result channels

1. None

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Execute	
TCP port range	Specify the TCP ports to be scanned for connectivity on the target host. Example: 80,9000-9010,143
Connection retries	Specify the number of times to try to connect in a case of connection error to a single port.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out and setting the port status to Closed.
If any port is open trigger	Specify which state to set in case if any port in the specified range is open. Select "Down" state if you want to monitor if the firewall is working fine. Select "Up" state if you want to monitor if the host accepts connection on ports used by important services.
Port scan delay	Specify the time to wait before scanning another port from the specified port range. Increase this value if the Firewall on the target host treats the port range scan as malicious activity.

Reactions (Alerts & Remedies)
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

HTTP Advanced

This Check Technology is used to monitor the availability, response content, transfer time and transfer speed of an http(s) site.

Result channels

1. Loading time (ms)
2. Transfer speed (Kbit/s)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Specific Settings (New Dialog)	
URL	Specify the address of the http(s) site in URL format. Example: http://inteliance.com
Port	Specify the port in a range between 0 and 65535 inclusive. Set the port to 0 to let ServersMaster detect and use a standard port depending on the URL scheme.
Post data	Specify the data to send along with the request using the POST method. Example: "Var1=5&Var2=test"

Authentication	Select the type of authentication if the http site requires one. You will also need to enter logon credentials in the corresponding fields if authentication is enabled.
Connection settings	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check response	
If the last response value is different then the previous, set	Specify which state to be set if the initial response value is different from subsequent response values. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

HTTP Transaction

This Check Technology is used to monitor the availability, response content, transfer time and transfer speed of multiple http(s) sites.

Result channels

1. Average loading time (ms) *
2. Average transfer speed (Kbit/s) *

* The average values are calculated using the response values (loading time & transfer speed) returned by the scans to each of the URLs in the transaction.

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
List of HTTP URLs to check	
Use the Add/Edit/Remove buttons to manage the list of URLs.	
Per URL configuration dialog	
URL	Specify the address of the http(s) site in URL format. Example: http://inteliance.com
Port	Specify the port in a range between 0 and 65535 inclusive. Set the port to 0 to let ServersMaster detect and use a standard port depending on the URL scheme.
Post data	Specify the data to send along with the request using the POST method. Example: "Var1=5&Var2=test"

Authentication	Select the type of authentication if the http site requires one. You will also need to enter logon credentials in the corresponding fields if authentication is enabled.
Connection settings	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check response	
If the last response value is different then the previous, set	Specify which state to be set if the initial response value is different from subsequent response values. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

HTTP SSL Certificate

This Check Technology is used to monitor the SSL certificate validity on a single or multiple https sites.

Result channels

1. Days until expiry

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Specific Settings (New Dialog)	
URL	Specify the address of the http(s) site in URL format. Example: http://inteliance.com
Port	Specify the port in a range between 0 and 65535 inclusive. Set the port to 0 to let ServersMaster detect and use a standard port depending on the URL scheme.
Connection settings	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check SSL certificate	
State "Warning" if days	Specify the days till expiry of the SSL certificate, that triggers a Warning

until expiry less than	state.
State "Down" if days until expiry less than	Specify the days till expiry of the SSL certificate, that triggers a Down state. Set this value to 0 to trigger Down state when the certificate expired.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

FTP Download Speed

This Check Technology is used to monitor the download speed by downloading a file using the FTP protocol.

Result channels

1. Download speed (Kbit/s)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Specific Settings (New Dialog)	
URL	Specify the address of the FTP resource in URL format. Example: ftp://ftp.inteliance.com/test.zip. Note: FTPS protocol is not supported on this Check.
Port	Specify the port in a range between 0 and 65535 inclusive. Set the port to 0 to let ServersMaster detect and use a standard port depending on the URL scheme.
<u>Connection settings</u>	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.

Check download speed	
State "Warning" if download speed lower than	Specify the download speed, in Kbit/s, that triggers a Warning state.
State "Down" if download speed lower than	Specify the download speed, in Kbit/s, that triggers a Down state.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

FTP Response

This Check Technology is used to monitor the availability and the response time of an FTP server.

Result channels

1. Connection time (ms)
2. SSL handshake time (ms)
3. Login time (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and login	
FTP account settings	Opens another dialog used to configure the FTP URL, port, connection encryption and logon credentials.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection/login failed set	Specify which Check state to set if the connection or login failed.
Warning if response time greater than	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down if response time greater than	Specify the minimum connection time, in milliseconds, that triggers a Down state.

Reactions (Alerts & Remedies)
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

FTP File Size

This Check Technology is used to monitor the size of a file using an FTP server.

Result channels

1. File size (bytes)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and login	
FTP account settings	Opens another dialog used to configure the FTP URL, port, connection encryption and logon credentials.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection/login failed set	Specify which Check state to set if the connection or login failed.
Warning if response time greater than	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down if response time greater than	Specify the minimum connection time, in milliseconds, that triggers a Down state.
File size triggers	

Path and file name	Enter the path and file name. Exampe: public_html/test.zip
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH Cpu Load

This Check Technology is used to monitor the CPU load on UNIX-like systems over SSH protocol.

Result channels

1. Last 1 min load
2. Last 5 min load
3. Last 15 min load
4. Number of CPUs

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the … button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection/login failed set	Specify which Check state to set if the connection or login failed.
Triggers	
Warning if CPU load greater than	Specify the minimum CPU load that triggers a Warning state.
Down if CPU load greater than	Specify the minimum CPU load that triggers a Down state.

Reactions (Alerts & Remedies)
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

SSH Memory Usage

This Check Technology is used to monitor the memory usage on UNIX-like systems over SSH protocol.

Result channels

1. Memory usage (%)
2. Memory usage (MB)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning if real memory usage greater than	Specify the minimum real memory usage, in percentage, that triggers a Warning state. The real memory is the total memory without the cached memory.
Down if real memory usage greater than	Specify the minimum real memory usage, in percentage, that triggers a Down state. The real memory is the total memory without the cached memory.

Reactions (Alerts & Remedies)
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

SSH HDD Usage

Monitor the hard disk usage on UNIX-like systems over SSH protocol.

Result channels

1. HDD usage (%)
2. HDD usage (MB)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the … button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning if used space greater than	Specify the minimum total space usage, in percentage, that triggers a Warning state.
Down if used space greater than	Specify the minimum total space usage, in percentage, that triggers a Down state.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts &	

Remedies)" in this document for more details.

SSH Inodes Usage

Monitor the Inodes usage on UNIX-like systems over SSH protocol.

Result channels

1. Inodes usage (%)
2. Inodes count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning if usage greater than	Specify the minimum Inodes usage, in percentage, that triggers a Warning state.
Down if usage greater than	Specify the minimum Inodes usage, in percentage, that triggers a Down state.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts &	

Remedies)" in this document for more details.

SSH File/Dir count

Monitor the count of files/directories in a specific directory on a UNIX-like system over SSH protocol.

Result channels

1. File count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Execute	
Path and directory name	Enter the directory path. Example: "/home/testuser".
Recursive (inlc. sub-dirs)	Specify whether you want to count the files and directories inside sub-directories as well.
Check file count	
If the last response value is different then	Specify which state to be set if the initial file count is different from subsequent file counts. Select "Skip trigger" to ignore this trigger. The

the previous, set	initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH Remote Ping

This Check Technology is used to monitor devices for availability using ICMP protocol through an intermediary UNIX-like device communicated over SSH Protocol.

Result channels

1. Response time avrg (ms)
2. Packet loss (%)
3. Standard deviation (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connection	
Ping from	Select the remote host to be used to ping the device that is being configured. The remote host must support SSH protocol.
Rounds per check	Specify the number of echo requests to send per one Check scan. You need to specify more than 2 rounds if you want to track the fluctuations in the standard deviation.
SSH connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At SSH connection failed set	Specify which Check state to set if the connection failed.
Triggers	
Warning state if packet	Specify the minimum packet loss, in milliseconds, that triggers a Warning

loss greater than	state.
Down state if packet loss greater than	Specify the minimum packet loss, in milliseconds, that triggers a Down state.
Warning state if response time greater than	Specify the minimum response time, in milliseconds, that triggers a Warning state.
Down state if response time greater than	Specify the minimum response time, in milliseconds, that triggers a Down state. This value works as a ping reply timeout.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH Custom

This Check Technology is used to monitor the response value of a shell command executed on a UNIX-like system over SSH protocol.

Result channels

1. Response value

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the … button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check response content	
Send command	Enter the command to send to the host as soon as the service running on the target port is ready to accept data.
If the last response value is different then the previous, set	Specify which state to be set if the response value is different from subsequent response values. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for

	the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SFTP File/Dir count

This Check Technology is used to monitor the count of files/directories in a specific directory on a UNIX-like system over SSH FTP protocol.

Result channels

1. File count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connection	
Path and directory name	Enter the directory path. Example: "/home/testuser".
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check file count	
If the last response value is different then the previous, set	Specify which state to be set if the initial file count is different from subsequent file counts. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.

Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SFTP File Size

This Check Technology is used to monitor the size of a specific directory or file on a UNIX-like system over SSH FTP protocol.

Result channels

1. File size (bytes)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connection	
Path and file name	Enter the path and file name. Exampe: "public_html/test.zip".
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check file count	
If the last response value is different then the previous, set	Specify which state to be set if the initial file size is different from subsequent file sizes. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for the first time or the value returned when the Check is restarted.
Triggers for Up, Warn,	Configure the advanced Check state triggers that inspect the result values

Down and Unknown state	using a number of methods.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

Mail SMTP

This Check Technology is used to monitor the response time and ability to send a message over a SNMP mail server. The result channels provide split up times that helps you identify the bottle-neck for the problem.

Result channels

1. Response time (ms)
2. SSL handshake time (ms)
3. Login time (ms)
4. Email send time (ms)

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and send	
SMTP settings	Opens another settings dialog used to configure the logon credentials and message parameters.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
At connection failed set	Specify which Check state to set if the connection failed.
Warning if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Down state. This value works as a connection timeout.
Reactions (Alerts & Remedies)	

Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

Mail IMAP

This Check Technology is used to monitor the availability and the response time of an IMAP mail server, and optionally search a mailbox for specific messages. The result channels provide split up times that helps you identify the bottle-neck for the problem.

Result channels

1. Response time (ms)
2. SSL handshake time (ms)
3. Login time (ms)
4. Message count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and login	
IMAP settings	Opens another settings dialog used to configure the logon credentials.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Warning if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Warning state.

Down if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Down state. This value works as a connection timeout.
Check mailbox (optional)	
Mailbox name (folder)	Enter then name of the mailbox. Example: "Inbox".
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Search all messages	Select this option if you want the search to go through all the messages in the mailbox.
Search messages arrived in the last	Select this option if you want the search to check only the messages that arrived in the specified number of last days
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

Mail POP3

This Check Technology is used to monitor the availability and the response time of a POP3 mail server. The result channels provide split up times that helps you identify the bottle-neck for the problem.

Result channels

1. Response time (ms)
2. SSL handshake time (ms)
3. Login time (ms)
4. Message count

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and login	
POP3 settings	Opens another settings dialog used to configure the logon credentials.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Warning if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Warning state.
Down if connection time greater than	Specify the minimum connection time, in milliseconds, that triggers a Down state. This value works as a connection timeout.

Check message count and space usage (optional)	
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

Mail Route SMTP-IMAP

This Check Technology is used to monitor the time it takes to receive a messages on an IMAP mail server after being sent using a SMTP mail server.

Result channels

1. Round trip time

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and execute	
Mail send settings	Opens another settings dialog used to configure the SMTP logon credentials and recipient parameters.
Mail receive settings	Opens another settings dialog used to configure the IMAP logon credentials,
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At failure set	Specify which Check state to set if the email send-receive process failed.
Check for new message every	Specify the time to wait before checking the IMAP account for the arrival of the test message.
Triggers	

Warning if round trip time greater than	Specify the minimum round trip time, in milliseconds, that triggers a Warning state.
Down if round trip time greater than	Specify the minimum round trip time, in milliseconds, that triggers a Down state.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

Mail Route SMTP-POP3

This Check Technology is used to monitor the time it takes to receive a messages on a POP3 mail server after being sent using a SMTP mail server.

Result channels

1. Round trip time

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
Connect and execute	
Mail send settings	Opens another settings dialog used to configure the SMTP logon credentials and recipient parameters.
Mail receive settings	Opens another settings dialog used to configure the POP3 logon credentials,
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At failure set	Specify which Check state to set if the email send-receive process failed.
Check for new message every	Specify the time to wait before checking the POP3 account for the arrival of the test message.
Triggers	

Warning if round trip time greater than	Specify the minimum round trip time, in milliseconds, that triggers a Warning state.
Down if round trip time greater than	Specify the minimum round trip time, in milliseconds, that triggers a Down state.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SNMP Custom

This Check Technology is used to monitor various parameters on SNMP enabled devices using a custom OID (Object Identifier).

Result channels

1. Response value

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Connection	
SNMP port	Specify the port to be used when connecting to the SNMP service on the target host.
SNMP version	Specify the SNMP protocol version supported on the target host.
Community string	Enter the text string that acts as a password when connecting to the SNMP service.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Execute	
OID (Object ID)	Specify the OID that identifies a variable that can be read via SNMP.
Check response value	
If the last response value is different then the previous, set	Specify which state to be set if the response value is different from subsequent response values. Select "Skip trigger" to ignore this trigger. The initial value is the one returned from the Check when it is executed for

	the first time or the value returned when the Check is restarted.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SNMP Traffic

This Check Technology is used to monitor inbound and outbound traffic data, errors, discards and unicast/non-unicast packets on SNMP enabled devices.

Result channels

1. Traffic inbound
2. Traffic outbound
3. Traffic sum

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Connection	
SNMP port	Specify the port to be used when connecting to the SNMP service on the target host.
SNMP version	Specify the SNMP protocol version supported on the target host.
Community string	Enter the text string that acts as a password when connecting to the SNMP service.
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Execute	
Traffic type	Select the traffic type which can be any of the following: data, errors, discards , unicast packets, non-unicast packets and unknown protocols.
Interface	Select the network interface on the target host that will be monitored for a

	certain traffic type. Make sure you first click the button "Detect" to fetch the available interfaces on the target host.
Check response value	
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH MySQL

This Check Technology is used to monitor the availability and SQL query result of a MySQL server via SSH protocol. Connecting to MySQL via SSH provides a secure way to monitor the server, since the communication between the MySQL server and ServersMaster is encrypted using SSH connection.

Result channels

1. Numeric SQL result

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check SQL Query (optional)	
Database name	Enter the name of the database
SQL Query	Enter the SQL Query to be executed upon connection to the SQL server.
If the last response value is different then	Specify which state to be set if the last response value is different then the previous response value. Select "Skip trigger" to ignore this trigger.

the previous, set	
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH PostgreSQL

This Check Technology is used to monitor the availability and SQL query result of a PostgreSQL server via SSH protocol. Connecting to PostgreSQL via SSH provides a secure way to monitor the server, since the communication between the PostgreSQL server and ServersMaster is encrypted using SSH connection.

Result channels

1. Numeric SQL result

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Check SQL Query (optional)	
Database name	Enter the name of the database
SQL Query	Enter the SQL Query to be executed upon connection to the SQL server.
If the last response	Specify which state to be set if the last response value is different then the

value is different then the previous, set	previous response value. Select "Skip trigger" to ignore this trigger.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

SSH MySQL Statistics

This Check Technology is used to monitor various statistics of a MySQL server via SSH protocol. Connecting to MySQL via SSH provides a secure way to monitor the server, since the communication between the MySQL server and ServersMaster is encrypted using SSH connection.

Result channels

There are different result channels deepening on what kind of Statistics Type you select.

Statistics Type	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6
Common Commands	SELECT count	INSERT count	UPDATE count	UPDATE-multi count	DELETE count	DELETE-multi count
SELECT command	SELECT-scan count	SELECT-range count	SELECT-range-check count	SELECT-full-join count	SELECT-full-range-join count	
Sort	Sort-scan count	Sort-rows count	Sort-range count	Sort-merge-passes count		
Handler Reads	Handler-read-first count	Handler-read-key count	Handler-read-next count	Handler-read-prev count	Handler-read-rnd count	Handler-read-rnd-next count
Handler Alterations	Handler-write count	Handler-update count	Handler-delete count			
Traffic In-Out	Traffic received	Traffic sent				
Table Locks	Table-locks-immediate count	Table-locks-waited count				
Threads	Threads-cached count	Threads-connected count	Threads-created count	Threads-running count		
Temporary Creations	Created-tmp-disk-tables count	Created-tmp-files count	Created-tmp-tables count			

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Result Unit	Select the type of metric to be used for the result value.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.

Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Proxy Settings	Select the method of connection. The option "Application settings" will use the application wide proxy, if there is any configured. The option "No proxy" will force a direct connection disregarding the application wide proxy settings. The option "Set global proxy" allows you to select any of the Global Proxy Servers that can be applied to many Checks. To modify the Global Proxy List, click the ... button right next to the selection box.
SSH Connection	
Connection retries	Specify the number of times to try to connect in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
At connection failed set	Specify which Check state to set if the connection failed.
Advanced State Triggers (optional)	
If the last response value is different then the previous, set	Specify which state to be set if the last response value is different then the previous response value. Select "Skip trigger" to ignore this trigger.
Triggers for Up, Warn, Down and Unknown state	Configure the advanced Check state triggers that inspect the result values using a number of methods.
Case sensitive	Select whether to use case sensitive or case insensitive response value inspection. This option is taken into account only if at least one of the triggers above is enabled.
Reactions (Alerts & Remedies)	
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.	

DNS Black List

This Check Technology is used to test if the IP address or hostname is listed with the specified DNS Black List servers.

Result channels

1. Number of Black List servers where the host is listed
2. Number of Black List servers where the host is not listed
3. Number of Black List servers that are offline

Check Settings

General settings	
Scan frequency	Specify the time interval between two executions of a Check. If you use a value of 5 minutes, the Check will run every 5 minutes.
Display result	Specify the type of response value to be shown on the screen in the Device Monitor List.
Data storage	Select the method for storing monitoring data. Full data storage means that the results of each Check scan will be saved as separate records in the database. If you use aggregation then a collection of results will be saved as a single record. The aggregation reduces the database size significantly.
Log event on state	Select which states trigger an event. When a Check state changes to any of the selected states a new event will be saved in the Event log.
Connection	
Black List servers	Opens another dialog used to manage the list of servers.
Mode	Specify whether the Black List servers support IP address only or they support domain records as well.
Connection retries	Specify the number of times to try to connect to a single Black List server in a case of connection error before setting the result to connection failed.
Connection timeout	Specify the time, in milliseconds, to wait to establish a connection before timing out.
Triggers	
Warning if number of hits greater then	Specify the minimum number of Black List servers which has the host listed, that triggers a Warning state.
Down if number of hits greater then	Specify the minimum number of Black List servers which has the host listed, that triggers a Down state.
Warning if offline servers greater then	Specify the minimum number of Black List servers which are offline, that triggers a Warning state.
Down if offline servers greater then	Specify the minimum number of Black List servers which are offline, that triggers a Down state.

Reactions (Alerts & Remedies)
Manage the Reactions activated for the Check. Please refer to the chapter "Reactions (Alerts & Remedies)" in this document for more details.

Reactions (Alerts & Remedies)

Every Check can be configured with a number of Reactions. The purpose of Reactions is to notify administrators for a certain problem or automatically fix a problem without human intervention. You can setup multiple Reactions per Check. Each Reaction is fired when specific conditions are met, depending on how the action triggers are configured.

The Reactions can be managed under the Check Settings dialog. For instance, if you want to add an Email alert to a Ping Check you would do the following:

1. Open the Device Settings dialog.
2. Select the Checks Tab.
3. Double-click the Check in the list of activated Checks.
4. Click the Add button under the Reactions section.
5. Select the Email as a type of Reaction and enter the necessary settings.
6. Click OK to add the Reaction to the list.

Here is a sample scenario:

- A Ping Check is configured to set the Check state to Warning if the packet loss is above 50%. In addition, the following Reactions are configured:
  1) An Email Reaction that fires up when the Check state is Warning for more than 30 min.
  2) A SSH Command Reaction that fires up when the Check state is down.
  3) An Email Reaction that fires up when the Check states returns to Up state.
- Due to the issue on the target server, the Ping Check started to return a packet loss in the range of 60-70%.
- After 30 minutes of monitoring, the last Ping Check returned a packet loss that was still not satisfactory and above 50%. This condition triggered the Email Alert that sent email to all the administrators.
- After 60 minutes, the packet loss hit 100%. ServersMaster activates the SSH Command Reaction that executes a server restart command.
- After 80 minutes, the packet loss dropped to 10%. Serversmaster fires the Email Reaction used to inform administrators that the Device is back to normal function.

The available Reaction types are: Email, SMS, HTTP(S), SSH Command, Execute Program, Play Sound, Popup Message.

Appendix

This chapter contains the following sections:

- Abbreviations
- Legal Notices
- Support

Abbreviations

Please find below the list of most common Abbreviations used in this document:

- **DNS**: Domain Name Service
- **HTML**: Hypertext Markup Language
- **HTTP**: Hypertext Transfer Protocol
- **ICMP**: Internet Control Message Protocol
- **IMAP**: Internet Message Access Protocol
- **OID**: Object Identifier
- **PDF**: Portable Document Format
- **POP3**: Post Office Protocol version 3
- **SFTP**: SSH File Transfer Protocol
- **SMTP**: Simple Mail Transfer Protocol
- **SNMP**: Simple Network Management Protocol
- **SSH**: Secure Shell
- **SSL**: Secure Sockets Layer
- **TCP:** Transmission Control Protocol

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2.2 jQuery Library

jQuery JavaScript Library v1.5.1

http://jquery.com/

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Date: Wed Feb 23 13:55:29 2011 -0500

2.3 Flot Javascript plotting library for jQuery

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2.5 SNMP++ Library

2.6 Botan Library

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2.7 ASIO Library

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